

FIG. 1

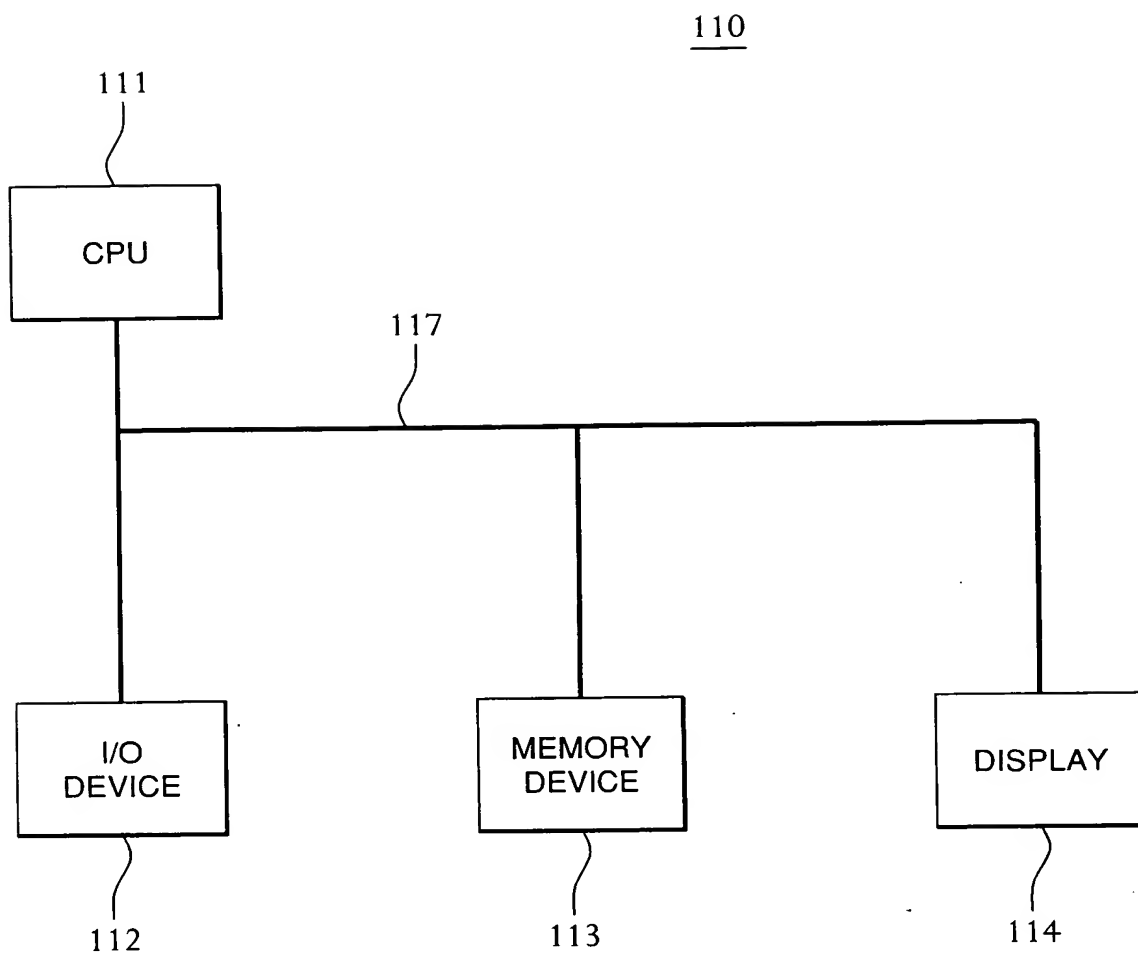


FIG. 2

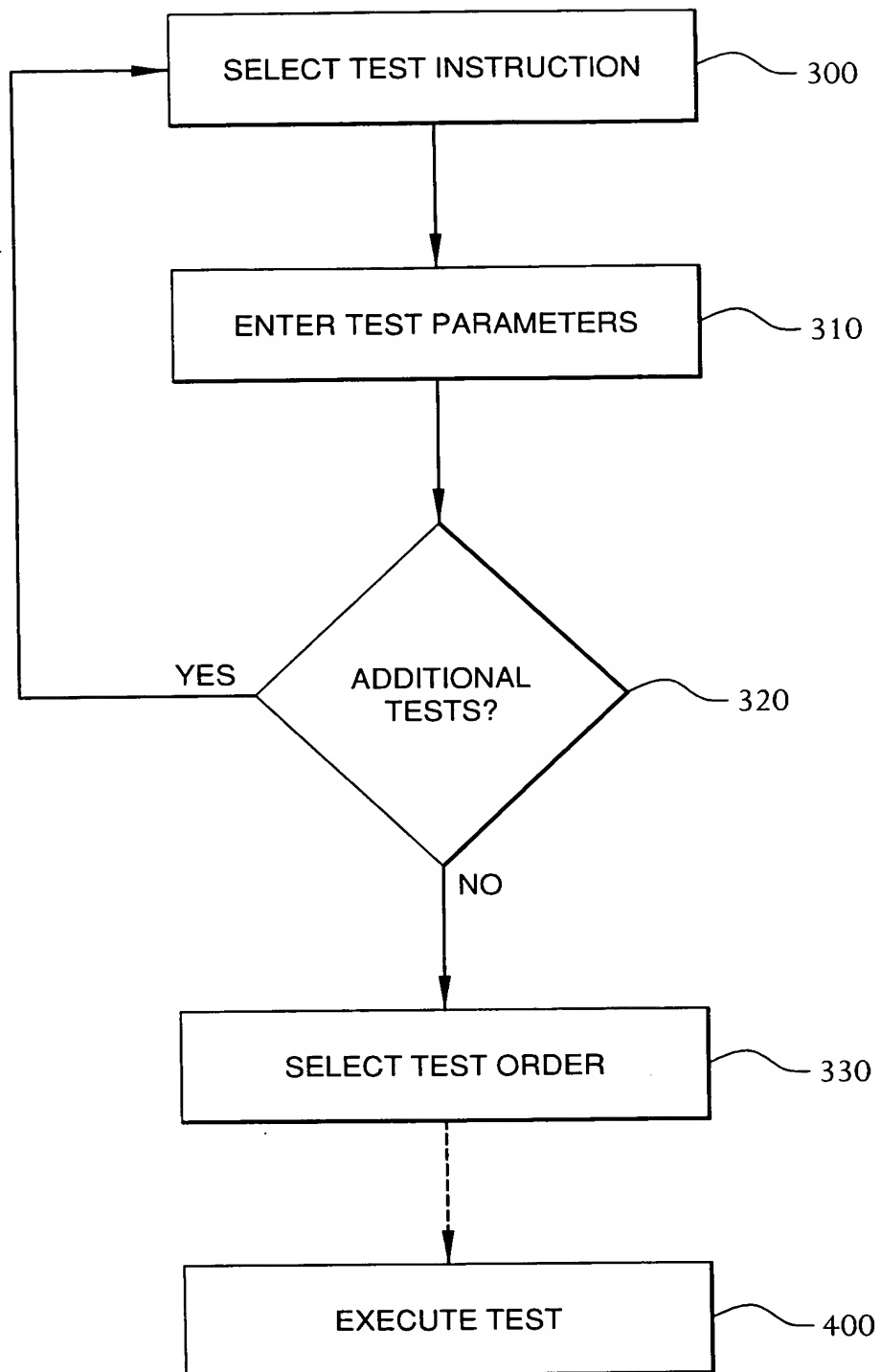


FIG. 3

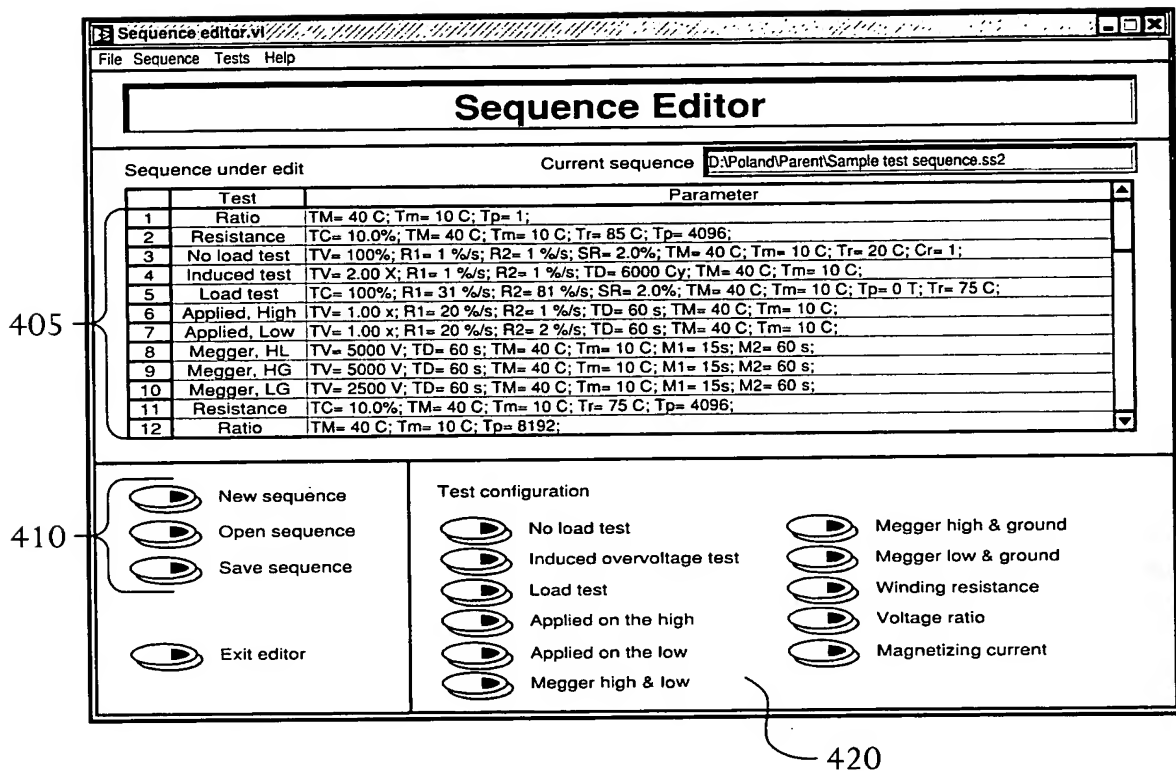


FIG. 4

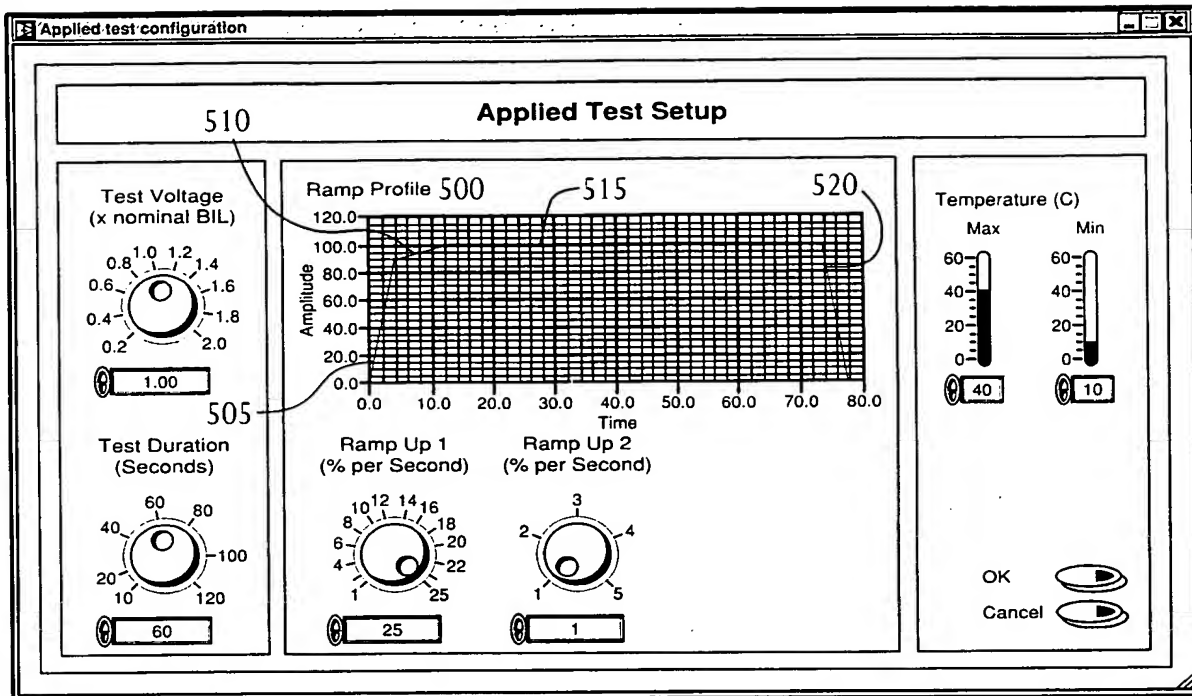


FIG. 5

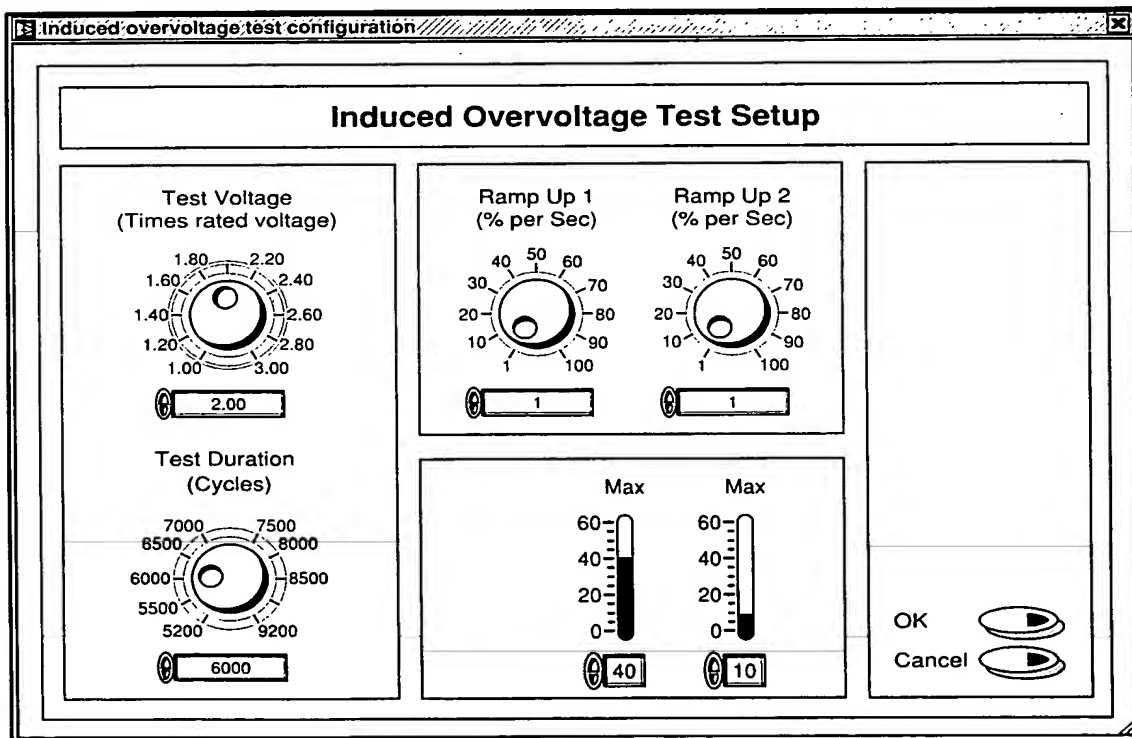


FIG. 6



Load Test Setup

Test Current
(Percent of nominal current)

70 75 80 85 90 95 100
65 60 55 50
100

Stability Current
(Percent of test current)

2.0 2.5 3.0 3.5 4.0 4.5 5.0
1.5 1.0 0.5 0.0
2.0

Ramp Up 1
(% per Sec)

40 50 60 70 80 90 100
30 20 10 1
1

Ramp Up 2
(% per Sec)

40 50 60 70 80 90 100
30 20 10 1
1

Temperature (C)

Max Min
60 60
40 40
20 20
0 0
40 10

Tap
Nominal

T ref
150 100 50 20
75

OK Cancel

FIG. 7

Setup-Mag current.vi

Magnetizing Current

Test Voltage
(V)

200 250 300 350 400 450 500
150 100 50
100

Stability Range
(Percent of test voltage)

2.5 3.0 3.5 4.0 4.5 5.0
2.0 1.5 1.0
2.00

Ramp Up 1
(% per Sec)

40 50 60 70 80 90 100
30 20 10 1
1

Ramp Up 2
(% per Sec)

40 50 60 70 80 90 100
30 20 10 1
1

Max Min
60 60
40 40
20 20
0 0
40 10

OK Cancel

FIG. 8



Megger test configuration

Megger Test

Test Voltage (V)

2000 3000
1000 4000
0 5000

2500

Test Duration (Seconds)

150
100 200
50 250
0 300

60

Measurements

15
60

Time

0

Add ☐

Delete ☐

Temperature (C)

Max Min

60 60
40 40
20 20
0 0

40 10

OK ☐

Cancel ☐

FIG. 9

No load test configuration

No Load Test Setup

Test Voltage (Percent of nominal voltage)

85 90 95
80 100
75 105
70 110

100

Stability Range (Percent of test voltage)

2.5 3.0 3.5
2.0 4.0
1.5 4.5
1.0 5.0

2.00

Ramp Up 1 (% per Sec)

40 50 60
30 70
20 80
10 90
1 100

1

Ramp Up 2 (% per Sec)

40 50 60
30 70
20 80
10 90
1 100

1

Temperature (C)

Max Min

60 60
40 40
20 20
0 0

40 10

☒ Correct?

T ref

150
100
50
0

20

OK ☐

Cancel ☐

FIG. 10



Ratio: test configuration

Ratio Test Setup

Taps Tested

☐ All?

Taps

Nominal

Add

Delete

Max

60
40
20
0

40

Min

60
40
20
0

10

OK

Cancel

FIG. 11

Resistance: test configuration

Resistance Test Setup

Test Current (%)

5 6 7 8 9 10

10.0

T ref

150
100
50
20

75

Temperature (C)

Max

60
40
20
0

40

Min

60
40
20
0

10

Taps Tested

☐ IEC?
☐ All?

Taps

Nominal

Add

Delete

OK

Cancel

FIG. 12



Automated Test

Hardware Status

CT Tap

PT Tap

Megger switch ☐

Visible disconnect ☐

Shorting switch ☐

Resistance H switch ☐

Resistance L switch ☐

Step up tap

Output mode

Deck

1 2 3

Sw. Network

Err Err Err

Output energized ☐

Emergency ☐

Error ☒

Test Results

Applied ☐

Mag current ☐

Induced ☐

Losses ☐

No load loss ☐

At 100% ☐

Side	Vt	Status

Vt	I	Status

Vt	Imp.	Status
Q396.0		ERR

Vt	Status
Q 254.1	ERR

Side	Vt	Status
Q380		ERR

Side	Vt	Status
QHG	2000	ERR
QHL	2500	ERR

Tap	Status

Tap	Status

Temperature

50

25

0

21.26

Tester

Date

Time

Commands

☐ Start

☐ Stop

☐ Reset

☐ Change TUT

Screen

☒ Hardware status

☐ Details

☐ Exit

Test Sequence

%

#	Test	Parameters
1	Ratio	TM= 40 C; Tm= 10 C; TP= 30
2	Resistance	TC= 50 A; TM= 40 C; Tm= 10 C; TP= 40
3	Mag current	TV= 380 V; RU= 1 V/s; AT= 1; SR= 2.0%; TM= 40 C; T
4	Load test	TC= 100 %; RU= 1 V/s; AT= 1; SR= 2.0%; TM= 40 C; T
5	No load test	TV= 105 %; RU= 1 V/s; AT= 1; SR= 2.0%; TM= 40 C; T
6	Megger, HL	TV= 2500 V; TD= 60 s; TM= 40 C; Tm= 10 C; M1= 15 s;
7	Megger, HG	TV= 2000 V; TD= 60 s; TM= 40 C; Tm= 10 C; M1= 15 s;

FIG. 13